IN THE CLAIMS

The status of each claim is listed below.

Claims 1-51 (Canceled).

Claim 52 (Currently Amended): A method for providing cells with the capacity to produce a mutated protein, wherein the amino acid sequence of the protein is mutated by comprising at least one unconventional amino acid, comprising:

introducing at least one missense mutation in a target codon of a gene encoding a protein required for the growth of the cells, wherein the mutated protein synthesized from the mutated gene is not functional in the cells; and

culturing the cells in a culture medium which (1) does not containing a nutrient compensating for the loss of functionality of the mutated protein and (2) contains an amino acid not encoded by said at least one missense mutation and which can restore functionality to said protein required for growth of the cells.

Claim 53 (Currently Amended): The method of Claim 52, further comprising a second culturing in a second culture medium containing a nutrient compensating for the loss of functionality of the mutated protein.

Claim 54 (Previously Presented): The method according to claim 52, wherein the step of culturing the cells comprises a series of cultivation steps of the same cells under selective conditions until mutants capable of growing in the absence of the nutrient required by loss of the functionality of the mutated protein are obtained.

Claim 55 (Previously Presented): The method of Claim 52, wherein the missense mutation is chosen from missense mutations which spontaneously reverse at a frequency of one organism from at least 10^{15}.

Claim 56 (Previously Presented): The method of Claim 52, wherein the missense mutation transforms a target codon of a gene encoding a protein required for the growth of said cell, into a codon which, in comparison with the target codon, exhibits a change of at least two bases.

Claim 57 (Previously Presented): The method of Claim 52, wherein the target codon encodes an amphiphilic amino acid.

Claim 58 (Previously Presented): The method of Claim 52, wherein the target codon encodes an amino acid which has a steric volume which is the same as or smaller than the steric volume of the amino acid encoded by the missense mutation.

Claim 59 (Previously Presented): The method of Claim 56, wherein the target codon encodes cysteine.

Claim 60 (Previously Presented): The method of Claim 56, wherein the amino acid encoded by the missense mutation is valine or isoleucine.

Claim 61 (Currently Amended): The method of Claim 52, wherein said introducing is carried out using a vector comprising the mutated sequence of said gene encoding a protein

required for the growth of said cells ~~a sequence of said gene encoding a protein required for the growth of said cells~~, including said missense mutation.

Claim 62 (Previously Presented): The method of Claim 61, wherein said vector is a plasmid vector.

Claim 63 (Currently Amended): The method of Claim 52, further comprising isolating ~~selecting~~ the cells which grow in said culturing.

Claim 64 (Currently Amended): Method of Claim 63, further comprising culturing the isolated cells in a second culture medium containing said amino acid encoded by said target codon.

Claim 65 (Previously Presented): The method of Claim 64, wherein the concentration of said amino acid in said second culture medium is at a concentration higher than the concentration of said amino acid in said first culture medium, and wherein the method further comprises selecting the cells sensitive to the concentration of said amino acid in said second culture medium.

Claim 66 (Previously Presented): The method of Claim 63, wherein the aminoacyl-tRNA synthetase which recognizes the amino acid encoded by said missense mutation of said selected cells is capable of charging onto one of its associated tRNAs an unconventional amino acid or an amino acid other than said amino acid encoded by said missense mutation.

Claim 67 (Previously Presented): The method of Claim 65, wherein the nucleic acid sequence of the gene encoding said aminoacyl-tRNA synthetase includes at least one mutation compared with the sequence of the corresponding wild-type gene.

Claim 68 (Currently Amended): The method of Claim 67, wherein said mutation in the nucleic acid sequence of the gene encoding said aminoacyl-tRNA synthetase is generated in vivo ~~in has not been introduced by a technique of genetic recombination~~.

Claim 69 (Previously Presented): A cell obtained using a method according to Claim 52.

Claim 70 (Currently Amended): An isolated cell capable of producing a protein, wherein the amino acid sequence of the protein is mutated by comprising at least one unconventional amino acid, wherein the cell comprises an aminoacyl-tRNA synthetase which recognizes a given amino acid and which is capable of charging onto one of its associated tRNAs an unconventional amino acid or an amino acid other than said given amino acid, and in that the nucleic acid sequence of the gene encoding said aminoacyl-tRNA synthetase includes at least one mutation compared with the sequence of the corresponding wild-type gene, wherein said mutation has not been introduced by a genetic ~~generic~~ recombination technique.

Claim 71 (Previously Presented): The cell of Claim 69, which is a prokaryotic or eukaryotic cell.

Claim 72 (Previously Presented): The cell of Claim 71, which is a prokaryotic cell.

Claim 73 (Previously Presented): The cell of Claim 69, which is selected from the group consisting of the following cells deposited at the CNCM (Collection Nationale de Culture de Microorganismes [National Collection of Microorganism Cultures], Paris, France):

(a) *E. coli* strain deposited at the CNCM under the No. I-2025 on May 25, 1998,

(b) *E. coli* strain deposited at the CNCM under the No. I-2026 on May 25, 1998,

(c) *E. coli* strain deposited at the CNCM under the No. I-2027 on May 25, 1998,

(d) *E. coli* strain deposited at the CNCM under the No. I-2339 on-October 26, 1999,

(e) *E. coli* strain deposited at the CNCM under the No. I-2340 on October 26, 1999, and

(f) *E. coli* strain deposited at the CNCM under the No. I-2341 on October 26, 1999.

Claim 74 (Previously Presented): A method of producing a protein the amino acid sequence of which comprises at least one unconventional amino acid, comprising culturing the cell of Claim 69 under conditions to produce the protein.

Claim 75 (Currently Amended): A process for producing a protein the amino acid sequence of which comprises at least one unconventional amino acid, comprising:

(a) selecting a cell by a method according to Claim 63;

(b) culturing said cell selected in (a) in a culture medium and under culture conditions which allow the growth of said cell, and producing a supernatant and a cell pellet; and

(c) isolating said protein comprising at least one unconventional amino acid from the culture supernatant and/or from the cell pellet obtained from (b).

Claim 76 (Previously Presented): The process of Claim 75, wherein said culture medium in (b) allows the growth of said cell contains said unconventional amino acid or a precursor thereof.

Claim 77 (Previously Presented): The process of Claim 75, wherein said unconventional amino acid is synthesized by said cell.

Claim 78 (Previously Presented): The process of Claim 77, wherein the synthesis of said unconventional amino acid is increased by genetic modification of said cell.

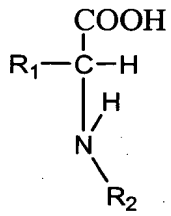
Claim 79 (Previously Presented): The process of Claim 75, wherein said cell is auxotrophic for the amino acid encoded by said target codon.

Claim 80 (Previously Presented): The process of Claim 75, wherein said cell comprises a homologous or heterologous gene of interest the coding sequence of which includes at least one target codon.

Claim 81 (Previously Presented): The process of Claim 80, wherein the culture medium in (b) comprises the compounds required for inducing the synthesis of the protein encoded by said gene of interest.

Claim 82 (Previously Presented): The process of Claim 80, characterized in that the biological activity of the protein encoded by said gene of interest is at least partially conserved after the incorporation of said unconventional amino acid at the level of the target codon of said gene of interest.

Claim 83 (Previously Presented): The process of Claim 75, wherein the unconventional amino acid is represented by an amino acid of formula I having L configuration:



(I)

wherein R_1 or R_2 represents radicals containing a functional group capable of reacting selectively.

Claim 84 (Previously Presented): The process of Claim 83, wherein the functional group is selected from the group consisting of aldehyde, ketone, ethenyl, ethynyl, and nitrile groups.

Claim 85 (Currently Amended): The process of Claim 75, further comprising functionalizing ~~functionaling~~ the isolated protein.

SUPPORT FOR THE AMENDMENTS

Claim 52 has been amended to specify an "amino acid."

Claim 53 has been amended to clarify that the culturing recited therein follows the culturing recited in Claim 52.

Claims 61, 63, 68, 70, and 85 have been amended for clarity.

Claim 75 has been amended to specify producing a supernatant and a cell pellet in (b). That amendment is supported by original Claim 25, which specifies the production of a supernatant and a cell pellet in (c).

All of the amendments submitted above are supported by the specification at pages 2-31 and original Claims 1-51.

No new matter is believed to have been added to this application by these amendments.